US Army Medical Research and Materiel

Technology Available for Licensing

Use of Antibodies to Sialidase as Anti-infectious Agents and Anti-inflammatory Agents

Features and advantages:

- **Antibodies competitively inhibit endogenous sialidase, *in vitro***
- **Protects human peripheral blood mononuclear cells from HIV infection, *in vitro***
- **Intravenous pretreatment of mice decreases inflammatory response to thioglycollate**

Patent Status

- **Could potentially be given intravenously or injected directly into**

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KEYWORDS: sialic acid; inflammation; infection; HIV; white blood cells

This invention provides a means for affecting disease conditions that are related to cell-cell interactions by administering sialidase inhibitors, such as the sialic acid analogue 2,3-dehydro-2-desoxy-N-acetyl neuraminic acid (DANA), or antibodies to sialidase. The inflammatory process involves the activation of circulating white blood cells and their migration to sites of tissue damage or infection. Activated white blood cells express increased amounts of sialidase and are hyposialylated. Desialylation of cells increases their adhesion to and migration through the vascular endothelium. It also renders them more susceptible to infection by microbial agents, such as HIV-1. Methods are described for developing antibodies to mammalian sialidase. Inhibition of cellular sialidase with these antibodies significantly reduces the influx of neutrophils into inflammatory sites.

Although sialidase inhibitors have been marketed for use against influenza virus infections, their use in other infectious processes or inflammatory states has not been previously described. This invention extends the concept of sialidase inhibition to apply to infectious and [illegible]atory conditions in which the course of disease is affected by the activity of the endogenous sialidase of host cells. Sialic acid analogues (e.g., DANA) may be an effective treatment for patients suffering from inflammatory tissue responses such as ARDS and pneumonitis, and for HIV-infected individuals.

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